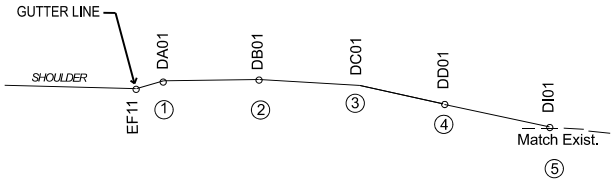
Chapter 12 Creating Driveway Strings

Now that your template has been added, and all intersections have been designed and cleaned up, you should design your driveways. You could simply move on to the earthworks design, but since your driveway solutions may show it necessary to make changes to your vertical alignment, it's recommended that you wait on the earthworks until after driveway surface design.

The MDOT Driveway String Naming Convention



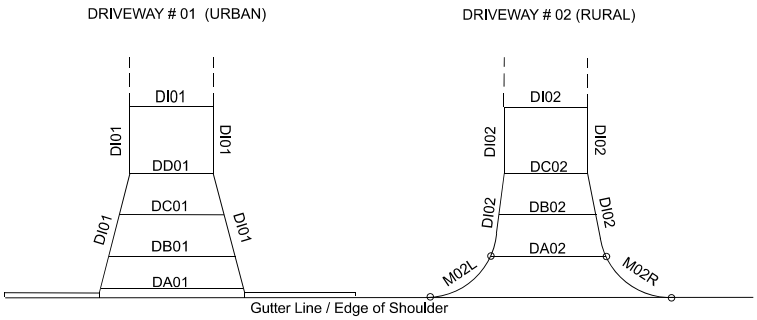
Driveway String Labels

Each driveway should be assigned a 2-digit number to represent it. It is recommended that you start at the beginning of the Mainline Master Alignment, and begin numbering the driveways as they are approached (i.e. Drive # 01, # 02, # 03, etc.) The last two characters of the driveway string labels should be modified to reflect the driveway number.

Driveway Number	Gutter Line	Drive String 1	Drive String 2	Drive String 3	Drive Interface
01	EF11	DA01	DB01	DC01	DI01
02	"	DA02	DB02	DC02	DI02
03	"	DA03	DB03	DC03	DI03

NOTE: These string lables can be used for all driveway types, both bumped and non-bumped, and with/without sidewalks. See MDOT Standard Details 800(1) and 800(2) for slopes, widths, and to determine which strings should be included/omitted.

Additional String Labels for Driveway Designs



Note the naming convention for driveway radii in rural, or non-curbed areas. These strings are Circular M-Strings, and therefore have the first character of "M" as all M-Strings must. The second and third characters are comprised of the "Driveway Number", and the last character either an "L" or an "R" for the radius on the Left or Right side of the driveway as viewed from the Centerline of the roadway.

General Procedures for Driveway Design

The general procedures for designing perpendicular drives are as follows:

1. Determine the station on the roadway's Master Alignment where the Driveway Centerline intersects it.
2. Add Points to your roadway's Master Alignment at these stations.
3. Create GROUND and DESIGN TEMPLATE cross-sections for the driveways.
4. Draw the driveway cross-sections.
5. Determine the driveway bump strings and driveway interface that best fits the driveway location.
6. Create these driveway bumps and interface strings with extra length to be trimmed later, and a "junk entrance string" which will define the driveway opening.
7. Add a discontinuity in the back of curb string equal in length to this junk entrance string for curbed areas.
8. Add points to your Driveway Interface String where it intersects the edges of the existing driveway.
9. Close the driveway surface in plan view by adding points from your junk entrance string to your driveway interface string.
10. Add points to your driveway interface string to reflect the driveway bump strings' elevations
11. Trim the driveway bump strings to the interface string.
12. Delete the junk entrance String
13. Create radii between the side of your driveway design, and the proposed gutter or edge of pavement string, for drives not in curbed sections, and trim the driveway interface string back to the beginning of each radius. Add subgrade strings if desired.
14. Generate and edit your ditches, berms, or other earthwork interface strings.

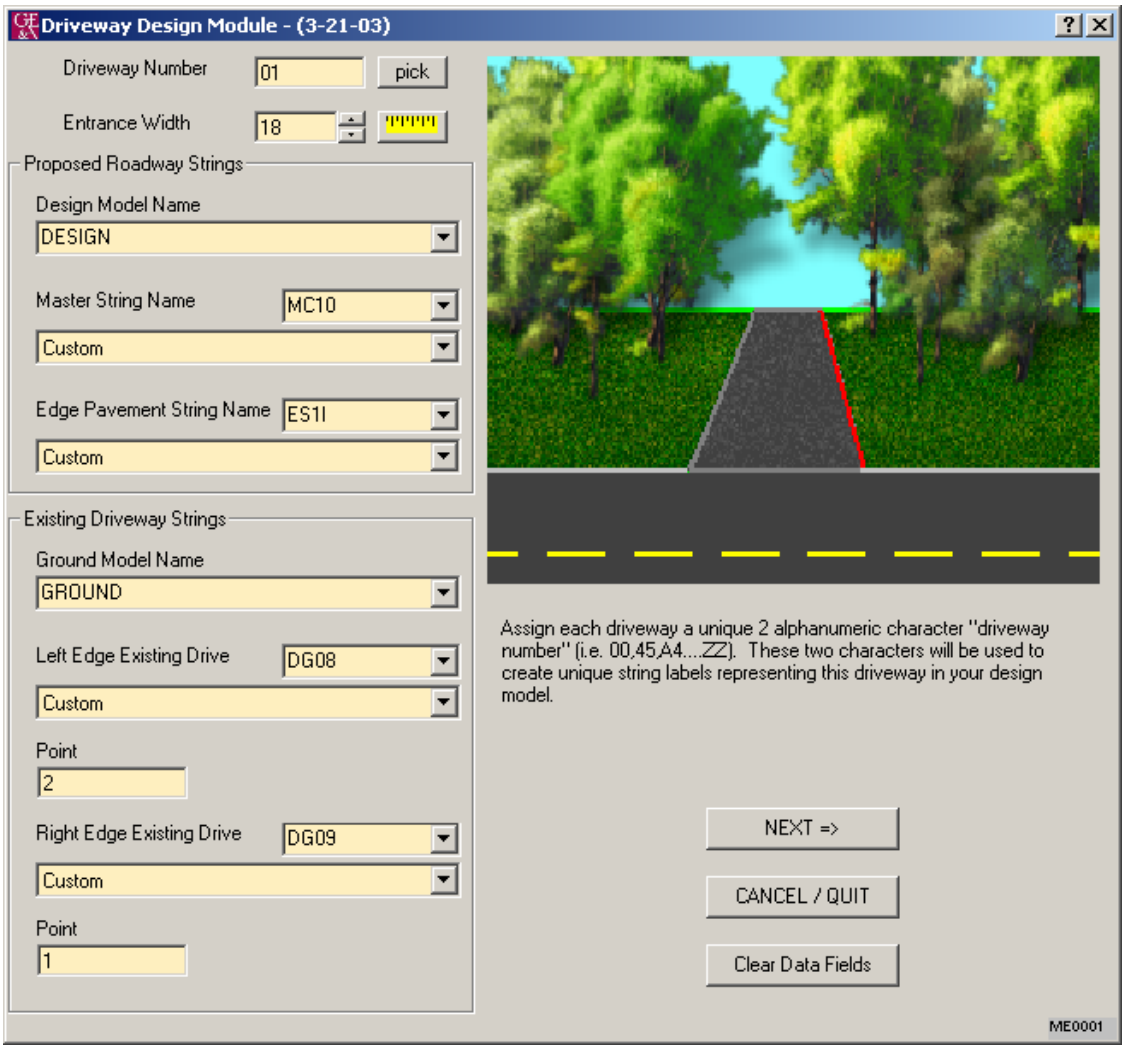
Steps 1 through 12 can be accomplished by running the *MDOT Driveway Design Add-In* from within MX. Below are the steps required to use this module.

Executing the MDOT Driveway Design MX Add-In

(preferred method)

How to Use the Add-In:

1. Select your plan view DPW, and window in on the vicinity of the driveway you wish to design.
2. Select **Design, MDOT Driveway Design** from the menu bar.
3. The following panel will appear:

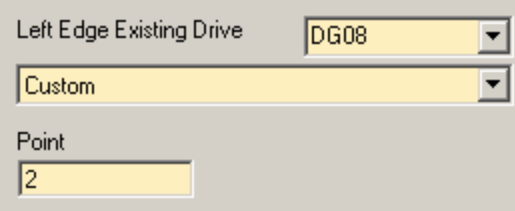


Each driveway on your project should be assigned a 2-character identifier, such as 01, 02, 03, A1, B2, etc. Each of the driveway strings generated for this driveway will end with this identifier.

Example: DA01, DB01, DC01, DI01 all are strings related to driveway "01".

Located below the drive number is the Entrance width. By selecting the ruler button you can measure your existing entrance to determine the necessary width for the new entrance.

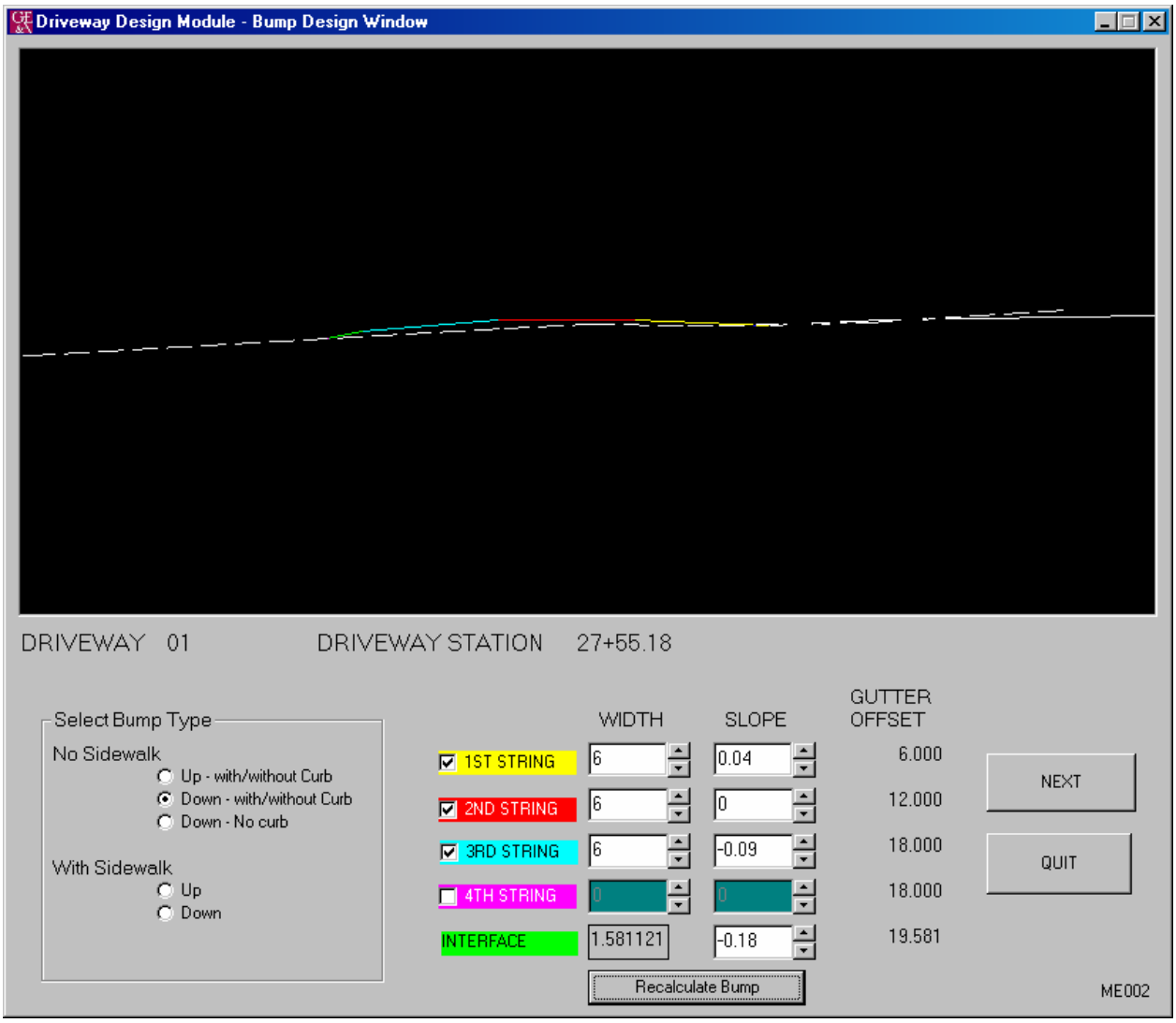
Next fill in the Master string name by clicking the screen, the Design model name will automatically fill in.



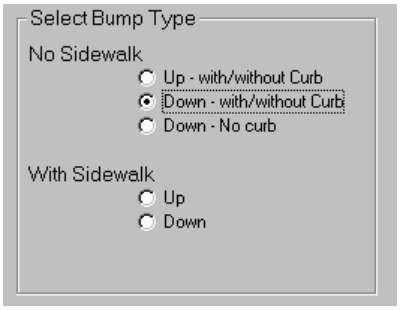
The same process holds true for the existing drive way string as well. By selecting the "***POINT***" on the existing driveway string, the unique driveway string name will automatically fill in. The cursor will then toggle to the "POINT" box for the right-side driveway string.

Select the strings as prompted in the menu. All fields are mandatory. When asked for the Existing Drive-Left String or Right String, select them as they would be viewed if you were standing in the center of your road looking at the driveway.

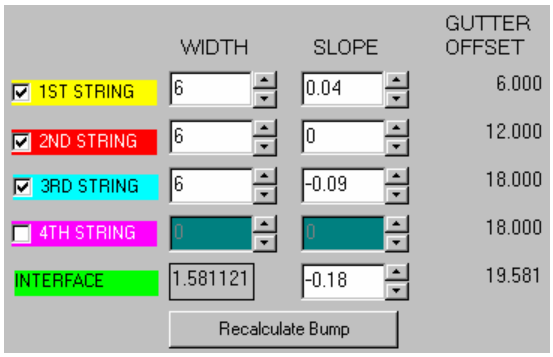
4: Select ***Next*** after you've entered in all of the values or selected the strings and the Driveway Bump Design Screen will pop to the front.



This area at the top of the screen will display the existing ground cross-section (gray dashed line), your proposed roadway template (solid gray line), and your driveway bump design strings. The bump strings are color-coded to correspond with the width/slope boxes in the lower middle of the screen.

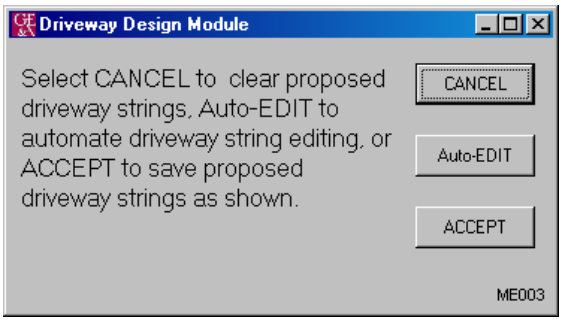


The area on the left is used to select a bump type. These types are in accordance with the MDOT Standard Details for Drives on Sidewalk and Non-sidewalk Sections. The Normal max values have been used as the default bump values for each type of bump design.

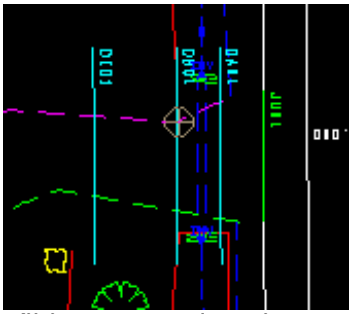


Once you've selected the rough bump type for your driveway, you can then modify the default values by replacing the width or slope of each bump string in the text boxes. Click on the button below those boxes to recalculate the bump strings, and the changes can be viewed in the section display area. If you don't want to create a particular bump string, then set the width equal to "0", or uncheck the checkbox next to that field. It will remove it from the display, and when you return to MOSS, that bump string will not be created.

5. Select ***Next*** To Continue



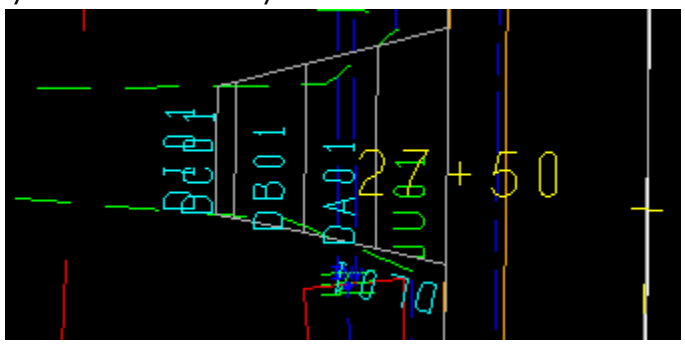
The next panel that appears will give you the option to Auto-edit your design strings or to accept them as proposed.



Before you select anything…….

You should now see the bump string displayed in the graphics area. The driveway strings which are shown in the display area are stored in a temporary model, and will only be saved to your design model if you choose ACCEPT or Auto-EDIT. If you choose CANCEL, these temporary strings will be deleted, and you'll be returned to the Driveway Design module's first panel with the current values still displayed. You can modify any value you need to and try another solution.

If you'd like to automatically complete the driveway surface design (minus the radii for rural drives), click the Auto-EDIT button before accepting the design. Your edges of driveway strings will be added, and all bump strings trimmed to these edge strings resulting in a driveway like this:



6. Click on ACCEPT to copy the drive strings from the temporary model to your design model.

Evaluation of Heavily-Skewed Driveways

Driveways whose centerlines are at a sharp skew angle to the roadway centerline must be evaluated as side roads, as they do not fall within the design capabilities of the MDOT Driveway Design Add-In. Thorough evaluation of these driveways must be accomplished, however, as they are as important as, or perhaps even more important than perpendicular drives when it comes to the influence they have on our Mainline Vertical Alignment.

If your project has any sharply skewed driveways, you will need to treat them as if they were a side-road, manually creating any surfaces that are necessary. On the bright side, once you determine what station this skewed centerline will intersect the roadway centerline, you can go into the MX Cross Section Wizard, and create a skewed section for this driveway and have it included in your cross section drawings. More on creating skewed sections later.

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